

## AMENDMENTS TO THE CLAIMS

Claims 1 – 6 (Cancelled).

7. (Currently Amended) A method for safe data transfer between an intrinsically safe sensor and a non-intrinsically safe computer unit, comprising the steps of:

converting analog measured values into digital measurement data in a sensor-module of the sensor;

transferring the digital measurement data to a sensor-module head of the sensor via a galvanically decoupled transfer path, and further to a calibration unit, wherein a calibration of the sensor is possible with the help of the calibration unit;

saving the measurement data to a portable storage medium which is separable from the calibration unit;

transporting the storage medium in a separated state to the computer unit;

connecting the storage medium with the computer unit via an interface that serves as an Explosion-barrier providing a galvanic separation, which occurs either optically or inductively with the computer unit; and

~~transferring the measurement data to the computer unit via a standard interface provided at the computer unit.~~

8. (Currently Amended) A method for safe data transfer between an intrinsically safe sensor and a non-intrinsically safe computer unit, comprising the steps of:

converting analog measured values into digital measurement data in a sensor-module of the sensor;

transferring the digital measurement data to a sensor-module head of the sensor via a galvanically decoupled transfer path, and further to a

calibration unit, wherein a calibration of the sensor is possible with the help of the calibration unit;

transferring the measurement data from the calibration unit to an interface, which is embodied as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively; and

transferring the measurement data from the interface to the computer unit via a standard interface provided at the computer unit wherein:

the standard interface at the computer unit is a USB-interface; and data transfer between the sensor and the calibration unit occurs with a proprietary protocol.

Claim 9 (Cancelled).

10. (Currently Amended) The method as claimed in claim ~~[[7]]~~ 8, wherein:

~~data transfer between the sensor and the calibration unit occurs with a~~  
the proprietary protocol in accordance with the RS485 standard.

11. (Previously presented) A method for safe data transfer between an intrinsically safe sensor and a non-intrinsically safe computer unit, comprising the steps of:

converting analog measured values into digital measurement data in a sensor-module of the sensor; and

transferring the digital measurement data to a sensor-module head of the sensor via a galvanically decoupled transfer path, and further to a plug-in module of the computer unit, with the plug-in module comprising an Explosion-barrier, providing a galvanic separation, which occurs either optically, capacitively or inductively.

12. (Previously presented) The method as claimed in claim 11,  
wherein:

the plug-in module is a PCMCIA plug-in card.

13. (Currently Amended) A method for safe data transfer between  
an intrinsically safe sensor and a non-intrinsically safe computer unit,  
comprising the steps of:

converting analog measured values into digital measurement data in a  
sensor-module of the sensor; [[and]]

transferring the digital measurement data to a sensor-module head of  
the sensor via a galvanically decoupled transfer path, and further to a plug-in  
module of the computer unit, wherein the plug-in module provides a galvanic  
separation which occurs either optically, capacitively or inductively[.].

wherein:

in the computer unit different sensors and measuring points are  
managed; and

a graphic illustration of the history of the sensor is provided at the  
computer unit.

14. (New) A method for safe data transfer between an intrinsically safe  
sensor and a non-intrinsically safe computer unit, comprising the steps of:

converting analog measured values into digital measurement data in a  
sensor-module of the sensor;

transferring the digital measurement data to a sensor-module head of  
the sensor via a galvanically decoupled transfer path, and further to a  
calibration unit;

calibrating the sensor with the help of the calibration unit;

saving calibration data of the sensor to a portable storage medium  
which is separable from the calibration unit;

transporting the storage medium in a separated state to the computer unit;

connecting the storage medium with the computer unit via an interface that serves as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively; and

transferring the calibration data to the computer unit via a standard interface provided at the computer unit.

15. (New) The method as claimed in claim 14, wherein:  
the computer unit provides a history of the sensor using the calibration data transferred from the portable storage medium.

16. (New) The method as claimed in claim 7, wherein:  
the measurement data is transferred to the computer unit via a standard interface provided at the computer unit, which is connected to the interface that serves as an Explosion-barrier .

17. (New) A method for safe data transfer between an intrinsically safe sensor and a non-intrinsically safe computer unit, comprising the steps of:  
converting analog measured values into digital measurement data in a sensor-module of the sensor;

transferring the digital measurement data to a sensor-module head of the sensor via a galvanically decoupled transfer path, and further to a calibration unit;

calibrating the sensor with the help of the calibration unit;

transferring calibration data from the calibration unit to an interface, which is embodied as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively; and

transferring the calibration data from the interface to the computer unit via a standard interface provided at the computer unit, wherein:

the computer unit provides a history of the sensor using the calibration data transferred from the portable storage medium.

18. (New) The method as claimed in claim 17, wherein:  
the standard interface at the computer unit is a USB-interface and  
wherein data transfer between the sensor and the calibration unit occurs with  
a proprietary protocol.

19. (New) The method as claimed in claim 13, wherein:  
an assessment of the life span of an electrode in a sensor is provided by  
the computer unit.